

IN THE CLAIMS:

The following is a complete listing of claims in this application.

Claims 1-17 (canceled).

18. (new) A light-emitting diode with active zones in the form of a multi-wavelength diode that emits a defined number of light wave-lengths, comprising a substrate (SUB) with a plurality of active zones (AZ₁-AZ_n), each of said active zones emitting radiation of a different wavelength,

a first said active zone (AZ₁) being grown on a surface of the substrate (SUB),

at least one upper active zone (AZ_n), and

at least one further active zone (AZ₂-AZ_{n-1}) epitaxially grown between the lower active zone (AZ₁) and the upper active zone (AZ_n),

the lower active zone (AZ₁) having a low energetic band gap and each subsequent active zones (AZ₂-AZ_n) having a higher energetic band gap than a previous active zone,

the active zones being serially connected from the lower active zone (AZ₁) to the upper active zone (AZ_n) via at least one dividing layer (TD₁-TD_n) that serves as a low impedance resistor and as a substrate for growing a further or upper active zone, the at least one dividing layer being designed as a reciprocally polar np or pn junction in the form of an isolation diode or tunnel diode, and semiconductor materials used for growing or epitaxing the isolation diodes or tunnel diodes (TD) having either an indirect band junction or an energetic band gap, which in each case is higher than semiconductor materials that are used beneath it,

wherein an absorption layer (Abs_s) is grown on an active zone (AZ₁-AZ_n), the absorption layer being formed of a material which is the same as a pn layer of the active zone on

which the absorption layer is grown, and which adjusts intensity of light emitted by the active zone on which the absorption layer is grown to correspond to the intensity of other active zones.

19. (new) A light-emitting diode with active zones according to claim 18, wherein the material of the substrate (SUB) is selected from the group consisting of GaAs, Ge, InP, GaSb, GaP, InAs, Si, SiGe, SiC, SiGe:C, sapphire, and diamond.

20. (new) A light-emitting diode with active zones according to claim 18, wherein the active zone (AZ₁-AZ_n) contains at least one material selected from the group consisting of GaAs, GaInP (suitable compositions), AlGaAs (many suitable compositions), GaInAs (suitable compositions), AlInGaP (many suitable compositions), GaAsN, GaN, GaInN, InN, GaInAlN (suitable compositions), GaAlSb, GaInAlSb, CdTe, MgSe, MgS, 6HSiC, ZnTe, CgSe, GaAsSb, GaSb, InAsN, 4H--SiC, a-Sn, BN, BP, BAs, AlN, ZnO, ZnS, ZnSe, CdSe, CdTe, HgS, HgSe, PbS, PbSe, PbTe, HgTe, HgCdTe, CdS, ZnSe, InSb, AlP, AlAs, AlSb, InAs, and AlSb.

21. (new and withdrawn) A light-emitting diode with active zones according to claim 18, wherein, the light-emitting diode is a band emission diode which has a structure comprising:

a GaAs or Ge substrate (SUB),
a GaAs lower diode (AZ₁) grown on the substrate,
on top of lower diode, in alternating sequence, an isolation diode grown on the GaAs diode (AZ₁), followed by a GaInP diode (AZ₃) or Al-GaAs diode (AZ₃-AZ_n) grown on the isolation diode,

the band emission range being defined in that the number of diodes (AZ₁-AZ_n) and the number and the width of the peaks define a coincident light emission range which could not be achieved with a single peak, thus a resulting creation of an

emission range.

22. (new and withdrawn) A light-emitting diode with active zones according to claim 18, wherein each of the individual active zones (AZ₁-AZ_n) is equipped with a metallic contact (K) for connection to a connecting lead.

23. (new and withdrawn) A light-emitting diode with active zones according to claim 18, wherein the light-emitting diode is a blended-color LED (brown) which has a structure comprising:

a GaA or Ge substrate (SUB),

a lower active zone (AZ₁) made of GaInP or AlGaInP, grown on the substrate,

a first isolation diode (TD₁) made of GaInP or AlGaInP, grown on the lower active zone,

a center active zone (AZ₂) made of AlInGaP, grown on the isolation diode,

a second isolation diode (TD₂), and

an upper active zone (AZ₃) made of AlInGaP, grown on the second isolation diode.

24. (new and withdrawn) A light-emitting diode with active zones according to claim 18, wherein the light-emitting diode is a blended-color LED which has a structure comprising:

a GaAa or Ge substrate (SUB),

a lower active zone (AZ₁) grown on the substrate, followed by two additional active zones (AZ₂-AZ_n), between which a tunnel diode (TD₁-TD_n) is arranged, with upper active zone (AZ_n) having a metallic contact (K) for connection with an electrical terminal.

25. (new and withdrawn) A light-emitting diode with active zones according to claim 18, wherein the lower active zone (AZ₁) is made of an AlInGaP material having a wavelength of approximately 620 nm, the center active zone (AZ₂) is made of an AlInGaP semiconductor material having a wavelength of

approximately 550 nm, and the upper active zone (AZ₃) is made of a GaInN semiconductor material having a wavelength of approximately 400 to 450 nm.

26. (new and withdrawn) A light-emitting diode with active zones according to claim 18, wherein upper active zone (AZn) has a contact (BK) which is a bond contact.

27. (new and withdrawn) A light-emitting diode with active zones according to claim 18, wherein the light-emitting diode with the active zones forms a colored display.

28. (new and withdrawn) A light-emitting diode with active zones according to claim 27, wherein the colored display is formed from a plurality of said light-emitting diodes, one pixel of the colored display corresponding to a light-emitting diode, and each pixel and the corresponding colors being selectively activated.